

## **APPENDIX A**

**Foundation For Educational Advancement Today (FEAT) - Documents**

**FOUNDATION FOR EDUCATIONAL ADVANCEMENT TODAY**  
**Trustees**

"The membership of the organization's governing body is:"

- (1)    The Honorable Wilbur D. Mills, Chairman  
         1600 South Eads  
         Alexandria, VA 22202"

As representative from Arkansas' 2nd congressional district in the 76th-94th Congresses, the Honorable Mr. Mills provided extraordinary service to the nation as the longest serving Chairman of the United States House of Representatives Committee on Ways and Means. In addition to his work with the Foundation, he is associated with the Washington, D.C. office of the prominent New York legal firm of Shea and Gould serving in the capacity of special tax counsel.

- "(2)   Mr. Wayne Wells, Vice Chairman  
         56 Lake Forest  
         St. Louis, MO 63117"

Mr. Wells was for many years a major asset to General Dynamics as Treasurer and Director of the Company. Prior to his association with General Dynamics he was a partner with the international accounting firm of Arthur Anderson and Company. He is now retired from General Dynamics, but remains very active in investments civic and educational affairs.

- "(3)   Mr. Gary S. Coe, Secretary/Treasurer  
         702 Washington St., Suite 4697  
         Marina Del Rey, CA 90292

Mr. Coe has over twenty years experience in ownership and management of broadcast properties. Retiring in 1981 from an active role in the industry, he continues to maintain communications, real estate and investment interests.

*Wilbur D. Mills*  
CHAIRMAN  
FOUNDATION FOR EDUCATIONAL ADVANCEMENT TODAY

May 16, 1990

U.S. Department of Education  
400 Maryland Ave., S.W.  
Application Control Center - Rm. 3633  
Washington, D.C. 20202-4725  
ATTN: CFDA #84.203, "Star Schools Program"

**RE: STAR SCHOOLS PROPOSAL**

Gentlemen:

On behalf of the Foundation for Educational Advancement Today and the Yes Networks Partnership, I am pleased to transmit an original and two (2) copies of the partnership's application for a grant under the Star Schools Program.

The partnership, assisted by the Executive Advisory Board (EAB), represents diverse educational, governmental, and industrial interests. It proposes a unique, innovative, and timely solution to remove a major impediment to the distribution of quality video, computer, and other distance learning to America's schools, namely the high costs and inaccessibility of satellite transponder time and the requisite receiving equipment. This project will ultimately benefit all Chapter 1 schools and serve many other educational applications by making high quality programming available at dramatically reduced costs.

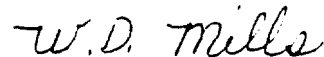
With the successful conclusion of this project, the Foundation will take two major actions: (1) It will make available to a national educational network two high-powered, Direct Broadcast Satellite (DBS) transponders for a fifteen-year period. With digital-based signal processing equipment of the type to be demonstrated through this Star Schools project, the volume of programming which can be made available to schools throughout the United States will increase dramatically, while transmission costs will be greatly reduced - an enormous gain for our educational resource base and (2) The Foundation will implement its plan to place a satellite receiver in each of America's 125,000 public and

private schools and libraries - a combined value approaching \$400,000,000. With this national educational infrastructure in place, the Foundation will inaugurate the YES Networks.

Our project is national in scope, with partners in Arkansas and Massachusetts, the National Association of State Coordinators of Compensatory Education, and a nation of participants. In accord with the directives of the Star Schools program, it is designed to demonstrate a system of delivery of quality mathematics and science-based curriculum programming superior to any presently available or foreseen. The Foundation, a 501(c)3 public charity, will act as the managing entity and fiscal agent for the partnership. The Project Director for the project is Mr. Donald K. Dement. The Foundation's accountants are Peat Marwick Main and Co.

We appreciate your consideration of our application, and look forward to working with you to bring to fruition a project which will contribute so much in support of the revolution in education programming that our nation needs to regain technological leadership. Should you have any questions pertaining to this submission, please call Donald K. Dement at (301) 858-5702.

Sincerely,

A handwritten signature in cursive script that reads "W.D. Mills".

Wilbur D. Mills  
Chairman  
The Foundation for Educational  
Advancement Today  
3105 South St., N.W.  
Washington, D.C. 20007

## **APPENDIX B**

**Correspondence in Support of the YES Networks Partnership Star Schools Proposal**

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# National Association of State Coordinators of Compensatory Education

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ESEA CHAPTER 1

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May 14, 1990

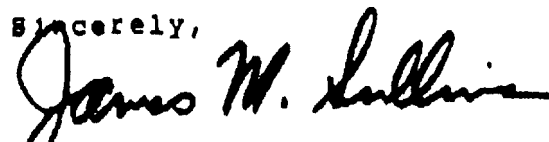
Mr. Michael Brustein  
Brustein and Manasevit, P.C.  
3105 South Street, NW  
Washington, DC 20007

Dear Michael:

The National Association of State Coordinators of Chapter 1 is pleased to continue support of the YES Networks Partnership under the Star Schools Program.

The State Coordinators would be glad to work with the Foundation of Educational Advancement Today under Chairman Wilbur Mills in the YES Networks Partnership.

Sincerely,



James M. Sullivan  
President  
National Association



## UNIVERSITY OF ARKANSAS AT LITTLE ROCK

2801 SOUTH UNIVERSITY • LITTLE ROCK, ARKANSAS 72204 • (501) 569-3285

Office of Research  
and Sponsored Programs

May 5, 1990

The Honorable Wilbur D. Mills, Chairman  
Foundation for Educational Advancement Today  
3105 South Street, N.W.  
Washington, D.C. 20007

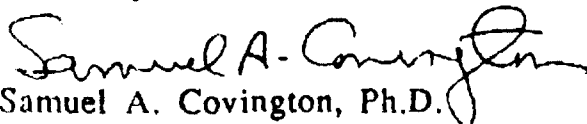
Dear Mr. Mills:

The University of Arkansas at Little Rock is pleased to be invited to participate in the educational partnership organized by the Foundation to submit an application to the U.S. Department of Education Star Schools Program. After reviewing the work already completed, we are excited about joining the project with the Foundation, the Massachusetts Institute of Technology, the Arkansas Department of Education, and the Massachusetts Department of Education. We believe the approach to be creative, innovative and truly revolutionary in its implications.

The University will assist in the evaluation of classroom demonstrations of course software and project-developed hardware in Arkansas and Massachusetts. The University will also be instrumental in developing a demonstration course for the project. Dr. Alan VanBiervliet will be the University's principal investigator for the tasks in our sub-grant.

Please let us know if we can be of any further assistance in advancing to fruition your excellent project.

Sincerely,

  
Samuel A. Covington, Ph.D.

Director



# UNIVERSITY OF ARKANSAS AT LITTLE ROCK

2801 SOUTH UNIVERSITY • LITTLE ROCK, ARKANSAS 72204 • 501/569-3410

ARKANSAS PROJECT MAST:  
Mathematics and Science Together

May 10, 1990

Alan Van Biervliet, Ph.D.  
Center for Research on Teaching and Learning  
University of Arkansas at Little Rock  
2801 S. University Avenue  
Little Rock, AR 72204

Dear Alan,

The Math and Science Together (MAST) Project is pleased to pledge our cooperation and assistance in accomplishing goals of the Digital Broadcasting and Digital Distance Learning Project. This project is an excellent extension of our own project activities to the middle schools. Project MAST staff and our Advisory Committee will share information and curriculum strategies with the Digital Project. We would also be pleased to share our expertise and provide consultation regarding the evaluation of the Digital Project.

I am looking forward to working with you and your staff.

Sincerely,

*Kathy Briggs*

Kathy Briggs  
Director, Project MAST





# The Commonwealth of Massachusetts

## Department of Education

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1385 Hancock Street, Quincy, Massachusetts 02169-5183

May 15, 1990

The Honorable Wilbur D. Mills, Chairman  
Foundation for Educational Advancement Today  
3105 South Street, N.W.  
Washington, D.C. 20007

Dear Mr. Mills:

Please be advised that the Massachusetts State Department of Education is delighted to offer its support and encouragement with respect to the Star Schools Program proposal submitted by "The YES Networks Partnership." We feel the Program offers a promising and stimulating learning opportunity for children in Chapter 1 schools in our state, and we look forward to working cooperatively with MIT and other members of the Partnership in implementing the Star Schools Program in Massachusetts.

Sincerely,

*Jack Baptista*  
Jack Baptista  
State Project Director  
Chapter 1, P.L. 100-297

JB/dc



MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
CAMBRIDGE, MASSACHUSETTS 02139

May 11, 1990

Dr. G. Gordon Apple  
Advanced Communications Engineering, Inc.  
722 S. Broadway  
Suite 30  
Redondo Beach, CA 90277

Dear Dr. Apple:

Thank you for the information you provided. Better education of our young students particularly in the areas of mathematics and science is vital to the economic health of this nation, and I am interested in participating in your effort to do so.

I am the director of MIT Advanced Television Research Program, and we have the facilities and personnel for development, simulation and evaluation of digital video compression algorithms for the YES Networks. It is my understanding that the funding for this activity will be \$300,000 for the first year. This fund will be used for development, evaluation and determination of the most suitable digital video compression algorithm. It is also my understanding that additional funding may be available during the second year for optimization of programmable parameters in the compression algorithm.

If you need additional information, please let me know.

Sincerely,

Jae S. Lim  
Professor of  
Electrical Engineering

JSL/dlh



PUBLIC SERVICE SATELLITE CONSORTIUM

600 Maryland Avenue, SW  
Suite 220  
Washington, DC 20024  
202-863-0890

May 14, 1990

The Honorable Wilbur Mills  
Chairman, Foundation for  
Educational Advancement Today  
3105 South Street, NW  
Washington, DC 20007

Dear Chairman Mills:

The Public Service Satellite Consortium (PSSC) looks forward to working with the Foundation for Educational Advancement Today (FEAT) in the implementation and operation of its proposed Star Schools funded project affectionately known as the YES Networks. PSSC has been involved with the YES Networks from its inception and welcomes the opportunity to continue this mutually beneficial relationship that has tremendous potential to increase educational services to underserved schools. The innovative concept in earth station design, inherent in the YES Networks, will not only expand the program distribution options, it will make better use of the finite resource we call the frequency spectrum.

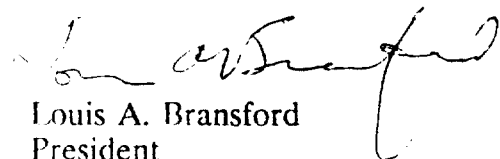
As background, the Public Service Satellite Consortium (PSSC) is a nonprofit membership organization. Our members represent the fields of education, health and medicine, public broadcasting, state government, trade, civic and professional associations and as an aggregate are involved in public service applications of telecommunications technology. We act, to a great extent, as a clearinghouse for information on programming sources, innovative technologies, technical considerations, and other telecommunications-related subjects for our members.

Our mission at PSSC is to help people appropriately apply existing and emerging communications technologies. For more than 15 years PSSC has been the meeting place for people pioneering new and innovative telecommunications technologies. Some of the biggest and most advanced telecommunications users in the nonprofit world are PSSC members, including the American Hospital Association, the U.S. Chamber of Commerce, the American Association of School Administrators, the National Education Association, the American Association of Community and Junior Colleges, the American Library Association and many more.

In fulfillment of its mission, PSSC has been instrumental in introducing telecommunications advances in public service organizations as well as numerous educational institutions now involved in distance learning ventures. Many public service organizations with satellite networks can trace their involvement in telecommunications technology to PSSC.

We wish the Foundation well in its efforts to establish a national educational satellite network using the latest in digital DBS technology. Please keep us informed on the status of your Star Schools proposal. We stand ready to assist.

Sincerely,

A handwritten signature in dark ink, appearing to read "Louis A. Bransford", is written over the printed name and title.

Louis A. Bransford  
President

LAB/drl



## S A T E L L I T E   R E C E I V E R   S Y S T E M S

May 14, 1990

The Hon. Wilbur D. Mills, Chairman  
Foundation for Educational  
Advancement Today  
3105 South Street, N.W.  
Washington, DC 20007

Dear Mr. Mills:

I appreciated the recent opportunity to hear about the Star Schools proposal being prepared for submission to the U. S. Department of Education by the Foundation for Educational Advancement Today. As one of the largest suppliers of satellite-receiving equipment for home and institutional use, we are very aware of both the technological changes which are occurring daily in our field and the tremendous educational opportunities which are available through the use of this technology in school-based programs. We are particularly impressed with new applications which are currently coming available with recent advances in Direct Broadcast Satellites and digital signal processing.

When you begin to implement the Foundation's goal of placing receiving equipment in each of America's schools and libraries, we, as vendors, would appreciate your considering our company as the supplier of the necessary hardware. We can offer considerable assistance in developing a schedule for installation and will assist the Foundation in any way practicable to reduce costs.

Congratulations again on your submission of what promises to be an exciting project and one which will help put America back on the track toward excellence in education.

Respectfully,

Charlie Ergen  
President

## **Appendix C**

### **Documents:**

**Advanced Communications Engineering, Inc.**

**Massachusetts Institute of Technology**

## **Board of Directors**

### **Advanced Communications Engineering, Inc.**

**James M. Beggs**

**600 Maryland Avenue, S.E., Suite 510**

**Washington, DC 20024**

**Chairman — Mr. Beggs was nominated and confirmed as the sixth NASA Administrator in June, 1981, shortly after the first flight of the Space Shuttle Columbia. Currently, he is also chairman of Spacehab, Inc.**

**AS NASA Administrator from 1981 through 1985 he was responsible for all aspects of the American Space and Aeronautics Program. During his tenure he directed the Space Shuttle program through the experimental flights into operational use of the shuttle for commercial launches, spacelab flights, scientific activities, and retrieval and repair operations.**

**During his administration the space science program was expanded and several new starts were initiated including a Venus mapper and a Mars Polar Observer. The science budget was increased to over 20% of the NASA budget. The Hubble space telescope, the Galileo Jupiter orbiter and probe, and several explorer spacecraft were completed.**

**In 1984, he was credited with convincing the Reagan Administration to initiate and fund the next logical step in space exploration with the design and development of of a space station. He then embarked on a world wide space station effort which resulted in the European space community, Japan, and Canada joining in the program. Additionally, he initiated the NASA program for Quality and Productivity, which seeks to stimulate excellence within NASA and its contractor family.**

**Prior to service with NASA, Mr. Beggs was, from 1974 to 1981, Executive Vice President and a Director of General Dynamics in St. Louis, Missouri.**

**Mr. Beggs' first government post was that of Associate Administrator, Advanced Research and Technology, NASA to which he was appointed by President Johnson in 1968. In 1969 he was nominated by President Nixon and confirmed as Undersecretary, Department of Transportation. In that position he was involved in restructuring the department during a very active period of new legislation initiatives in Airports and Airways, Urban Mass Transit, Railroads (including Amtrac**

founding and the initial resolution of the Penn-Central bankruptcy). and the initiation of the deregulation legislation for the transportation system.

From 1955 to 1968, he was employed in various marketing and engineering positions with the Westinghouse Electric Corporation. His last assignment was that of Vice President of the Westinghouse Defense and Space Center and the General Manager Electronics Division.

He is a 1947 graduate of the U.S. Naval Academy and in 1955 received an MBA from the Harvard Graduate School of Business Administration. He has been awarded six honorary doctorates.

Donald K. Dement  
1568 Ritchie Lane  
Annapolis, MD 21401

(Mr. Dement's full résumé is found below in Appendix D.)

G. Gordon Apple, PhD  
722 S. Broadway, Suite #30  
Redondo Beach, CA 90277

(Dr. Apple's full résumé is found below in Appendix D.)

Daniel H. Garner  
6803 Cantrell Road, Suite 200  
Little Rock, AR 72207

In 1982, Mr. Garner founded and is currently President of Advanced Communications Corporation. The FCC has authorized ACC to construct, launch, and operate a 27 transponder high-power DBS system located at 110° W, one of two premier orbital positions. He has strongly advocated for many years the use of DBS and digital techniques for comprehensive national educational solutions. Mr. Garner has been involved in communications services including radio, TV, cellular radio, and satellite broadcasting, beginning in 1970.





# Advanced Communications Engineering, Inc.

722 S. Broadway, Suite #30, Redondo Beach, CA 90277 213-540-6532  
Connect/AOL: AppleGG AppleLink: D4887 C/S: 71311,2544

## Memorandum of Cost Proposal

To: Wilbur D. Mills, FEAT / YES Networks Partnership  
From: Dr. G. Gordon Apple — ACE  
Subject: Star Schools Demonstration Equipment — ACE  
Date: May 14, 1990

Gentlemen,

We have attached for review the results of our latest discussions with you. We believe the estimates of cost and work schedules are accurate, and at your direction are prepared to execute a "Manufacturer's Agreement" and contract for work.

Let me reiterate, also, our understanding of what would be required of ACE in the Star Schools project.

- (1) Specifications for and manufacture of digital transmission equipment, receivers, and operating system software of suitable quality and in quantity necessary to support a classroom demonstration of satellite broadcast, digital technology. The demonstration would consist of transmitting mathematics and/or science lessons to schools in Arkansas and Massachusetts.
- (2) ACE would assist in the selection of the appropriate authoring and presentation software for broadcast, and develop a set of instructions for use of the equipment in the classroom. At your request, ACE may also assist in the classroom evaluations, but to our thinking it would be more appropriate for these to be independent assessments, say by the University or State Department of Ed. We might help with the follow-up interviews and work with the evaluator further in some manner.
- (3) Dean John McElroy (UTA), Dr. Norm Abramson (UH) and Prof. Jae S. Lim (MIT) as technical advisors to the partnership will review ACE's progress under Task 2.0 as the equipment is produced, inspected, assembled, tested and demonstrated. As we have said earlier, we understand the importance of a "learning Experience" for the partnership here, but want to insure that technical review does not slow production. We will be counting heavily on you for strong communications.
- (4) You also asked us to consider how and in what ways "match" for the project might be contributed by ACE to the partnership. Let me repeat: We view this project as strictly a demonstration and not as a commercial venture. We are prepared to assist in the demonstration and contribute some resources because of the potential benefits to ACE from having this opportunity to preview our design. We are confident that once the

technology is demonstrated practically, full-scale production will result. Therefore, we believe that we can provide match in the form of salaries, overhead and "in-kind" resources:

A. Satellite transmission time: We have had numerous conversations with the GE and Hughes telecom/satellite people, and on this basis are very confident that we can make satellite transmission time available for the demonstrations. We estimate that we will be able to document a value of about \$50,000.

B. Release from technology licensing fees - 12 months. (\$3,250,000 equipment value x 2%) \$65,000.

C. Contribution of salaries, fringe, supplies, travel, and overhead and other cost to ACE (Using a conservative hourly rate in our local California market for all costs and profit for engineering, technical, satellite communications, and similar types of professional services of \$85.00/Hr. less our estimated actual rate to the partnership of \$60.00/Hr. = \$25.00/Hr. differential (i.e., "below prevailing market wage"). \$25.00/Hr. x 18 employees (full-time) x 2,080 Hrs) \$936,000.

Match Summary:

A.	Satellite Transmission Time:	\$ 50,000
B.	Release From Licensing Fees:	65,000
C.	Salaries, Fringe, Overhead, etc :	936,000
Total:		\$ 1,051,000

We estimate the final cost to the partnership for all services and equipment manufacturer to be \$2,350,000, not counting the match calculated above.

Any or all of the is available to the partnership if you need it. Let us know your thoughts when you have had an opportunity to review the attached time estimates and flow charts on which the above is based.

G. Gordon Apple



**GE American  
Communications**

Frank E. Fels  
Manager Business Services

GE American Communications, Inc.  
Four Research Way, Princeton, NJ 08540 6684  
609 987 4006, Fx. 609 987 4517

May 8, 1990

Dr. G. Gordon Apple  
Advanced Communications Engineering, Inc.  
722 S. Broadway, #30  
Redondo Beach, CA 90277

Dear Dr. Apple:

It was a pleasure talking to you regarding the potential satellite space segment requirement.

GE Americom would be willing to participate in a test/demonstration of facilities, providing a reasonable amount of transponder time at no cost should you be successful in your proposal. As I mentioned, the scheduling of this test time would be subject to non interference with existing traffic and transponder availability.

Please let me know if you have any further comments or questions.

Sincerely,

Frank E. Fels

lal/

# **PROJECT PLAN FOR ACE AND MIT**

**(Advanced Communications Engineering, Inc.)**

**(Massachusetts Institute of Technology)**

## **Summary**

The attached charts include the top two levels of the detailed plan of work to be performed by ACE and MIT. Boxes with closed corners denote subtask which have been further broken down at the next lower level. Boxes with rounded corners denote milestones. The numbers above the boxes to the left and right denote earliest-start-date and calendar-days-duration respectively. One subtask (Fig. 1.4-1) shows two additional lower level subtasks which were not included here in order to preserve proprietary information. However, in all cases, manpower (by category) and schedule were estimated for each subtask and formed the basis for overall project cost and schedule.

The Computer Course Prototype task will provide transmission and reception to be used in the Computer Course demonstration. This task includes the demodulator, decoder, service selection, and basic timing modules that are also necessary for the TV Course Prototype. Simulation verification of the demodulator algorithm and generation of a demodulator LSI (Large Scale Integrated) circuit specification, which will be sent to manufacturers for chip quotations, are also included.

The Computer Course Software task consists mainly of generating the necessary control software to allow commercially available software to operate in a sequential or selective manner under the control of the Computer Course instructor. It also provides for the proper timing and sequencing of file transfers from the source computer to the destination computer and management and disposal of files in the destination computer. It is, in effect, the computer transmission operating system. The software task finishes with a computer-to-computer demonstration which uses the computer serial ports for direct communication and allows evaluation of the Computer Course concept.

After integration of hardware and software, a demonstration through an actual satellite link is planned. GE Americom (see Appendix B) has volunteered to provide satellite time for system tests and for the demonstration. An additional subtask is provided for final production specifications and LSI implementation.

The TV Course Prototype subproject will provide transmission and reception for demonstration of a TV Course. Specifications will also be generated for a set of LSI chips to be used in production of TV Course receivers and will be sent to manufacturers for chip quotations. An additional subtask is provided for final specifications for receiver production using LSI chips.

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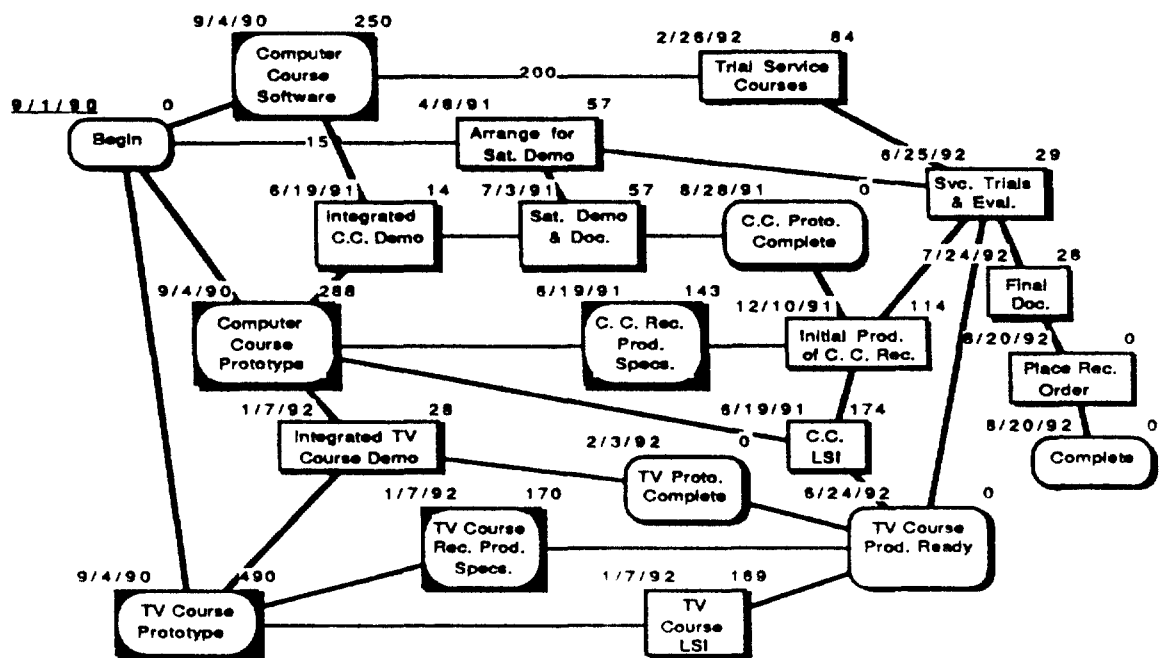


Figure 1-1 ACE Top Level Task Dependency (PERT) Chart

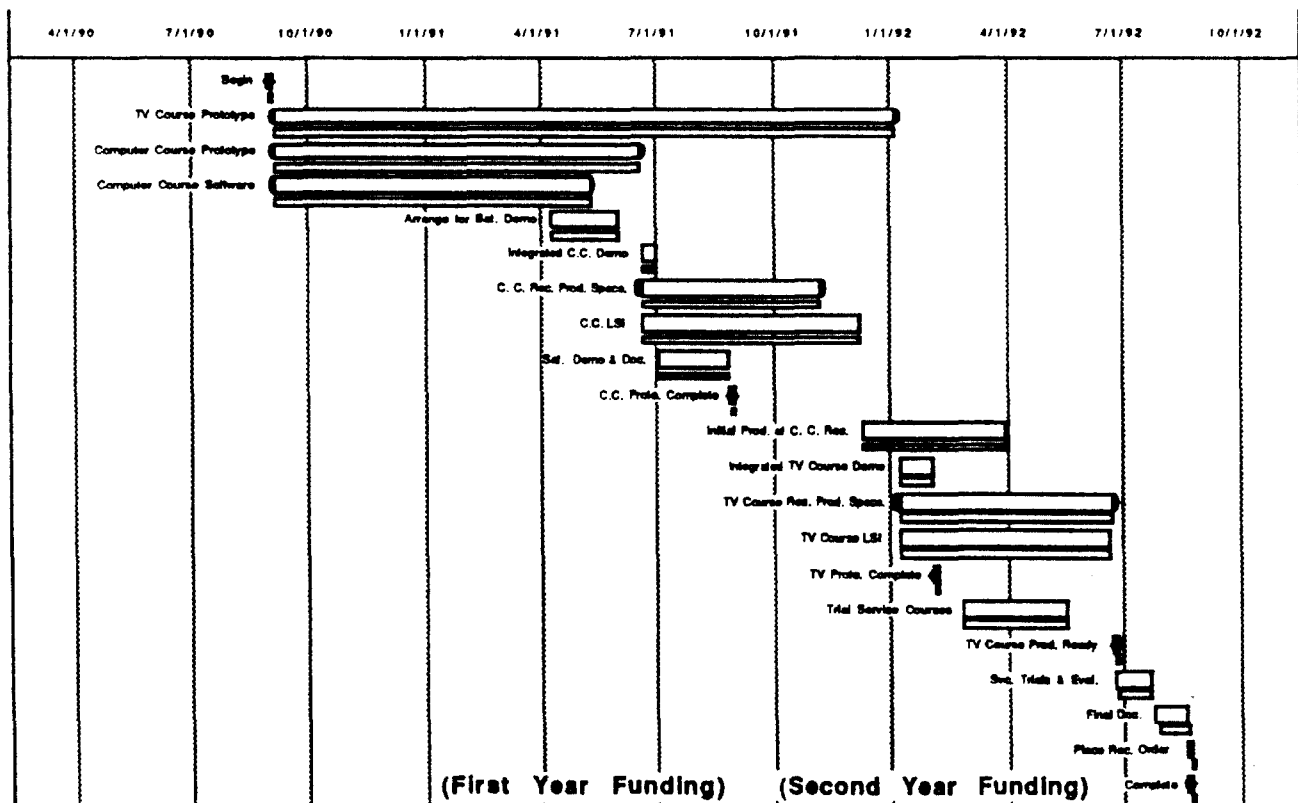


Figure 1-2 ACE Top Level Task Schedule (Gantt) Chart

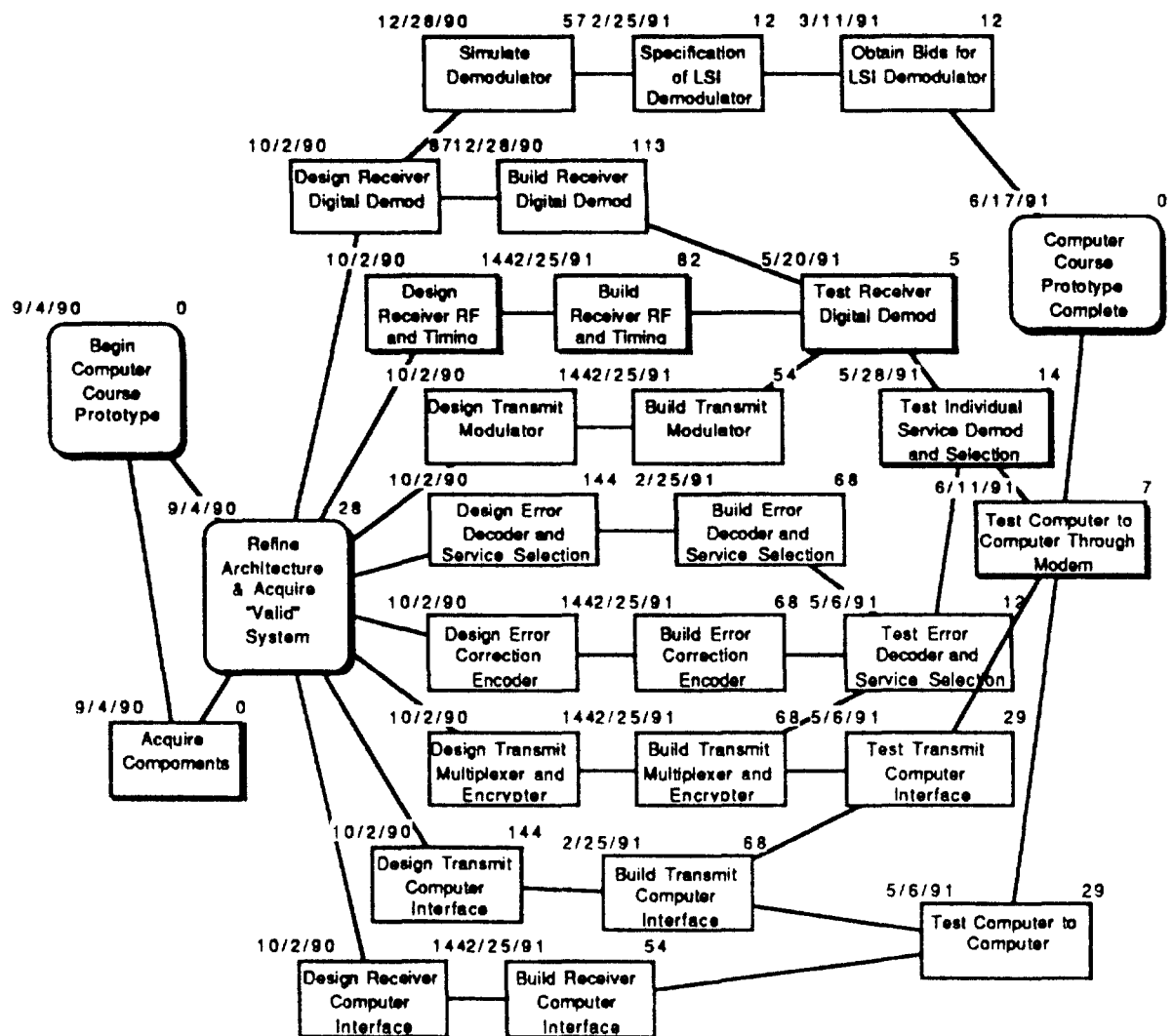


Figure 1.2-1 Computer Course Prototype Subtask Dependency Chart



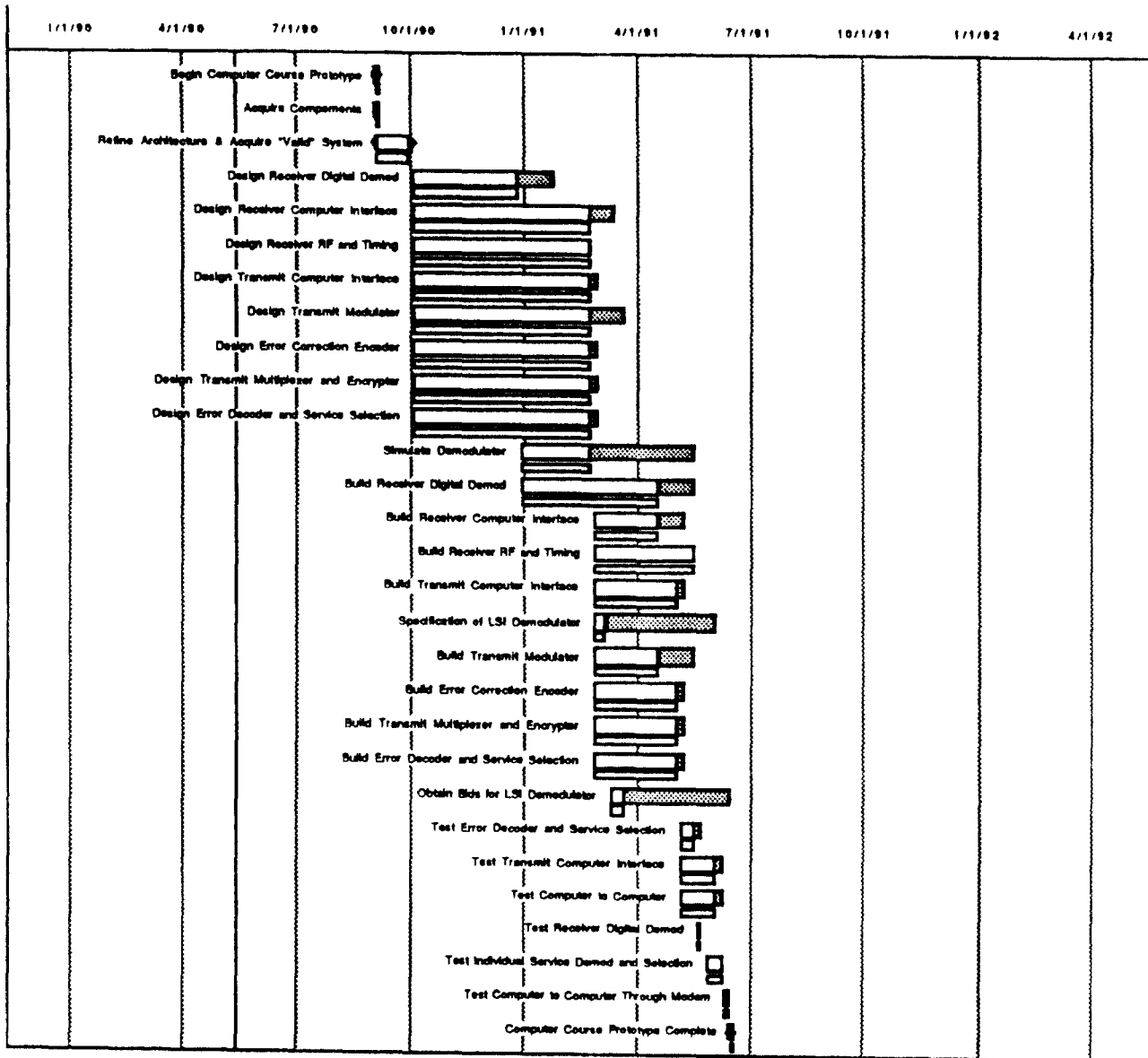


Figure 1.2-2 Computer Course Prototype Subtask Schedule Chart